IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application : **10/529,778**

Applicant(s) : **EPSTEIN et al.**

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Examiner : **SHIFERAW, Eleni A.**

Atty. Docket : **US020358US**

Title: **VERIFYING A NODE ON A NETWORK**

Mail Stop: **APPEAL BRIEF - PATENTS**
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL UNDER 37 CFR 41.37

Sir:

This is an appeal from the decision of the Examiner dated 17 February 2010, finally rejecting claims 1-21 of the subject application.

This paper includes (each beginning on a separate sheet):

1. **Appeal Brief;**
2. **Claims Appendix;**
3. **Evidence Appendix; and**
4. **Related Proceedings Appendix.**

APPEAL BRIEF

I. REAL PARTY IN INTEREST

The above-identified application is assigned, in its entirety, to **Koninklijke Philips Electronics N. V.**

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-21 are pending in the application.

Claims 1-4, 6-7, and 9-12 stand provisionally rejected by the Examiner on the grounds of nonstatutory obviousness-type double patenting.

Claims 1-21 stand rejected by the Examiner under 35 U.S.C. 103(a).

These rejected claims are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendments were filed subsequent to the final rejection in the Office Action dated 17 February 2010.

V. SUMMARY OF CLAIMED SUBJECT MATTER[1]

The invention addresses network security, and in particular, identifying nodes that are potentially not authorized access, based on whether the node is 'local' or 'remote', because most unauthorized accesses are performed by nodes that are distant from the node being attacked. A known technique for determining and/or approximating distance includes measuring the time between sending a query from the source node and receiving a response from the target/suspect node; if the measured time is above a given threshold, the target node is considered 'remote', and thereby subject to stricter security controls. (Applicants' specification, page 1, lines 11-14.) A problem with the known technique is that if the target node is slow in responding, its response delay may exceed the local/remote threshold, inappropriately subjecting the local target node to these stricter security controls.

In the claimed invention, the target delay includes a measure of the processing time required to generate the response. At the source node, this processing time is subtracted from the total query-response time to provide a more accurate measure of the distance between the source and target nodes, and thereby a more accurate determination of whether the target node is local or remote. (Specification, page 1, lines 30 - page 2, line 3).

[1] It is respectfully noted that it is not the appellants' intention that the claimed embodiments of this invention be limited to operation within the example embodiments described in this brief, beyond what is required by the claim language. These examples and their description are provided to facilitate ease of understanding and to comply with the requirements of an appeal brief, without intending that any further interpreted limitations be read into the claims as presented.

As claimed in independent claim 1, the invention comprises a method of determining proximity of a target node to a source node, comprising (FIG. 2):

communicating a query from the source node to the target node (page 2, lines 18-20),

communicating a response from the target node to the source node (page 2, lines 20-21), the response from the target node including a measure of processing time ($T_{process}$ 270) required to generate the response based on the query (page 2, lines 28-30),

receiving the response at the source node,

determining a measure of query-response time between communicating the query and receiving the response (page 2, lines 25-26), and

determining the proximity of the target node based on a communication time ($T_{communication}$ 260; page 2, line 32- page 3, line 7) that depends upon a difference (page 2, lines 30 – 32) between the measure of query-response time and the measure of processing time.

As claimed in independent claim 9, the invention comprises a node (110T) on a network including (FIG. 2):

a communication device (230) that is configured to receive a query from a source node (110S) and to transmit a corresponding response to the source node (page 2, lines 20-21),

a processor (240) that is configured to process the query and produce therefrom the response (page 2, lines 21-25),

wherein

the response includes a measure of processing time (270) required to process the query and produce the response (page 2, lines 28-30).

As claimed in independent claim 15, the invention comprises a node (110S) on a network including (FIG. 2):

a communication device (220) that is configured to transmit a query to a target node (110T) and to receive a corresponding response from the target node (page 2, lines 18-21), the response from the target node including a measure of processing time (270) required to generate the response at the target node (page 2, lines 28-30), and

a processor (210) that is configured to:

generate the query (page 2, lines 18-20),

receive the response,

measure a query-response time (280) between generating the query and receiving the response (page 2, lines 25-28), and

determine a proximity of the target node relative to the node based on a communication time that is dependent upon a difference between the query-response time and the measure of processing time (page 2, line 28 – page 3, line 7).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-4, 6-7, and 9-12 stand provisionally rejected by the Examiner on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 8-9, and 11-14 of copending application 10/529,353 (hereinafter Rosner) in view of Liao et al. (USP 6,717,915, hereinafter Liao).

Claims 1-21 stand rejected by the Examiner under 35 U.S.C. 103(a) over Lundkvist (USPA 2003/0184431) in view of Fletcher et al. (USP 6,363,477, hereinafter Fletcher), and Davis et al. (USP 6,088,450, hereinafter Davis).

VII. ARGUMENT

Claims 1-4, 6-7, and 9-12 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 8-9, and 11-14 of Rosner in view of Liao.

Claims 1-4, 6-7, and 9-12

The Examiner acknowledges that Rosner fails to teach that the response to the query includes a measure of the processing time required to generate the response based on the query, and asserts that Liao discloses this feature at column 1, line 61 through column 2, line 62, and FIGs. 1-4. This assertion is incorrect.

The Examiner fails to identify where, in the cited 69 lines of text and all of the figures, Liao discloses a processing time for responding to a particular query, or where Liao discloses the inclusion of this (non-existent) processing time for responding to the query in the response to this query.

Liao teaches the communication of 'timing statistics' from a client to a server, and the communication of 'timing parameters' from a server to a client. Because of the vagueness in the Office action, it is unclear whether the Examiner considers the 'timing statistics' from the client or the 'timing parameters' from the server as corresponding to the claimed measure of time to generate the claimed response to the claimed query.

Because Liao's 'timing parameters' from the server are control parameters that are subsequently used by the clients in their communications with the server, the applicants respectfully maintain that these parameters cannot be considered to correspond to a measure of the time required to generate a response to the query. Accordingly, the applicants assume that the Examiner is asserting that the 'timing statistics' from the client to the server corresponds to the claimed time required to generate the response based on the query.

Liao's 'timing statistics' from the client to the server cannot reasonably be considered to correspond to the claimed time required to generate the response based on the query. The generation of Liao's timing statistics will consume some time, but Liao does not teach or suggest that this report generation time should be included in the timing statistics, and such a report generation time is unrelated to the purpose of Liao's invention.

Nowhere in Liao's specification, and in particular, nowhere in the text cited by the Examiner, does Liao address the time required to generate the timing statistics, and thus Liao cannot be said to include this (non-addressed) time to generate the timing statistics in the response to the query from the client.

Because the combination of Rosner and Liao fails to teach or suggest a response that includes a measure of the processing time required to generate the response, as specifically claimed by the applicants, the applicants respectfully maintain that the provisional rejection of claims 1-4, 6-7, and 9-12 on the grounds of nonstatutory obviousness-type double patenting over Rosner in view of Liao is unfounded, and should be reversed by the Board.

Claims 1-21 stand rejected by the Examiner under 35 U.S.C. 103(a) over Lundkvist in view of Fletcher and Davis.

Claims 1-21

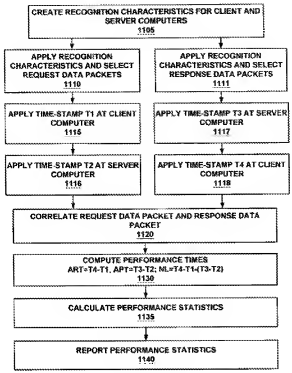
The combination of Lundkvist, Fletcher, and Davis fails to teach or suggest a response that includes a measure of the processing time required to generate the response based on the query for this response, as specifically claimed in each of the applicants' independent claims 1, 9, and 15, upon which each of the other claims depend.

The Examiner does not rely on any part of Davis in the rejection

The Examiner acknowledges that Lundkvist fails to disclose a response that includes a measure of the processing time required to generate the response, and asserts that Fletcher discloses this feature at column 18, lines 28-63 and claim 8. This assertion is incorrect.

Fletcher teaches a conventional network analysis system wherein send and receive time stamps are applied to each data packet, and these time stamps are subsequently processed by the network analysis system to assess network performance. As clearly indicated in Fletcher's FIG. 10, the requests are time-stamped at 1051, and the responses are time-stamped at 1052. Because multiple requests and responses are being monitored, these collected time-stamped requests and responses must be correlated, to determine which responses correspond to which requests, at 1053. Time stamp differences are stored in a data table, with performance statistics for periodic intervals, at 1054.

Fletcher's FIG. 11, to which the Examiner's cite to Fletcher refers, provides the details associated with the process of FIG. 10, and is provided below for ease of reference:



At 1105, recognition characteristics are created to facilitate the subsequent correlation of request and response data packets. The sequence 1110-1115-1116 of steps is applied to each request data packet, while the sequence 1111-1117-1118 is applied to each response data packet. These steps apply the recognition characteristics to each data packet, then time stamp the packet when it is sent from one computer and when it is received at the other. Of particular note, no computations of timing differences are performed during these processes.

At 1120, the request and response data packets are correlated based on the recognition characteristics. Of particular note, a determination of which response corresponds to which request does not occur until both the send and receive time-stamps have been applied to the requests and responses.

At 1130, the performance time differences are determined. The processing time at the server is defined as APT = T3-T2, where T3 is the time stamp applied at 1117, and T2 is the time stamp applied at 1116. Of particular note, this processing time is not determined until after the response is received at the client (1118), and after the response is subsequently correlated to the particular request (1120). Until step 1130, the processing time is unknown in Fletcher's disclosure.

According to Fletcher's teachings, for the client (or any other node) to know the processing time at the server, the client must receive and time stamp (T4) the response (1118), correlate the response to the request, then subtract the appropriate time stamp (T2) of the correlated request from the time stamp (T3) of the response.

The Examiner asserts that the time stamps that are applied to Fletcher's response correspond to a measure of the processing time. This assertion is incorrect. The time stamps (T3 and T4) contained in the response provide no indication of the processing time, per se. Absent time stamp T2, which is contained in the correlated request, and not in the response, there is no possible means of determining the processing time from the information contained in the response; thus, Fletcher's response cannot reasonably be said to include a measure of the processing time, as specifically claimed by the applicants.

As contrast to Fletcher, the applicants teach and claim that the target node (Fletcher's server node) includes a measure of processing time required to generate the response in the response to the query (Fletcher's request). In order to do this, the target/server node must determine and/or estimate this measure of processing time before sending the response to the source node (Fletcher's client node). Fletcher specifically teaches that the measure of processing time is determined and/or estimated after the response is sent from the target/server and subsequently received at the source/client.

If Fletcher's response included a measure of the processing time, as asserted by the Examiner, there would be no need for Fletcher to determine a correlated request, obtain the time stamp T2 from this correlated request, and subtract it from the time stamp T3 of the response, obviating the need for the bulk of Fletcher's disclosure.

Because the combination of Lundkvist, Fletcher, and Davis fails to teach or suggest communicating a response from a target node to a source node, the response from the target node including a measure of processing time required to generate the response based on the query from the source node, the applicants respectfully maintain that the rejection of claims 1-21 under 35 U.S.C. 103(a) over Lundkvist in view of Fletcher and Davis is unfounded, and should be reversed by the Board.

CONCLUSIONS

Because the combination of Rosner and Liao fails to teach or suggest a response that includes a measure of the processing time required to generate the response, the applicants respectfully request that the Examiner's provisional rejection of claims 1-4, 6-7, and 9-12 on the grounds of nonstatutory obviousness-type double patenting over Rosner in view of Liao be reversed by the Board, and the claims be allowed to pass to issue.

Because the combination of Lundkvist, Fletcher, and Davis fails to teach or suggest communicating a response from a target node to a source node, the response from the target node including a measure of processing time required to generate the response based on the query from the source node, the applicants respectfully request that the Examiner's rejection of claims 1-21 under 35 U.S.C. 103(a) over Lundkvist in view of Fletcher and Davis be reversed by the Board, and the claims be allowed to pass to issue.

Respectfully submitted,

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CLAIMS APPENDIX

1. A method of determining proximity of a target node to a source node, comprising:

communicating a query from the source node to the target node,

communicating a response from the target node to the source node, the response from the target node including a measure of processing time required to generate the response based on the query,

receiving the response at the source node,

determining a measure of query-response time between communicating the query and receiving the response, and

determining the proximity of the target node based on a communication time that depends upon a difference between the measure of query-response time and the measure of processing time.

2. The method of claim 1, wherein the query and response correspond to at least a portion of a cryptographic key-exchange protocol.

3. The method of claim 2, wherein the key-exchange protocol corresponds to a Needham-Schroeder key-exchange protocol.

4. The method of claim 1, wherein the query and response correspond to at least a portion of an OCPS protocol.

5. The method of claim 1, wherein the measure of processing time at the target node is predefined.

6. The method of claim 1, wherein determining the proximity includes comparing the communication time to a threshold value that distinguishes between local and remote nodes.

7. The method of claim 1, further including restricting communications with the target node based on the proximity.

8. The method of claim 1, wherein the response is cryptographically signed by the target node.

9. A node on a network including:

a communication device that is configured to receive a query from a source node and to transmit a corresponding response to the source node,

a processor that is configured to process the query and produce therefrom the response,

wherein

the response includes a measure of processing time required to process the query and produce the response.

10. The node of claim 9, wherein the processor is configured to process the query and produce the response as part of a cryptographic key-exchange protocol.

11. The node of claim 10, wherein the key-exchange protocol corresponds to a Needham-Schroeder key-exchange protocol.

12. The node of claim 9, wherein the query and response correspond to at least a portion of an OCPS protocol initiated by the source node.

13. The node of claim 9, wherein the measure of processing time is predefined.

14. The node of claim 9, wherein the processor is further configured to cryptographically sign the response.

15. A node on a network including:

a communication device that is configured to transmit a query to a target node and to receive a corresponding response from the target node, the response from the target node including a measure of processing time required to generate the response at the target node, and

a processor that is configured to:

generate the query,

receive the response,

measure a query-response time between generating the query and receiving the response, and

determine a proximity of the target node relative to the node based on a communication time that is dependent upon a difference between the query-response time and the measure of processing time.

16. The node of claim 15, wherein the processor is configured to generate the query and receive the response as part of a cryptographic key-exchange protocol.

17. The node of claim 16, wherein the key-exchange protocol corresponds to a Needham-Schroeder key-exchange protocol.

18. The node of claim 15, wherein the query and response correspond to at least a portion of an OCPS protocol initiated by the node.

19. The node of claim 15, wherein the measure of processing time is predefined.

20. The node of claim 15, wherein the processor is configured to determine the proximity based on a comparison of the communication time to a threshold value that distinguishes between local and remote nodes.

21. The node of claim 15, wherein the processor is further configured to control subsequent communications with the target node based on the proximity.

EVIDENCE APPENDIX

No evidence has been submitted that is relied upon by the appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.